



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/598,274

08/23/2006

Hideki Kawahara

P30573

2144

7055 7590 04/03/2009
GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

WILLIAMS, DON J

ART UNIT

PAPER NUMBER

2878

NOTIFICATION DATE

DELIVERY MODE

04/03/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No.		Applicant(s)	
	10/598,274		KAWAHARA ET AL.	
	Examiner		Art Unit	
	DON WILLIAMS		2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/27/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto et al (7,119,350) in view of Spirig et al (5,856,667).

As to claim 1 Hashimoto et al disclose (fig. 1) at least two photoelectric converters (3) configured to receive a light from a target space (Ob) into which a light intensity-modulated at a modulation signal having a predetermined frequency (emission frequency) is being irradiated, and generate an electric output corresponding to an intensity of received light, (column 6, lines 65-column 7, lines 1-14). Hashimoto et al also disclose (fig. 3, fig. 15) at least one electrode (6a) formed on each of said photoelectric converters (3), a charge storage portion (7a) formed in each of said photoelectric converters (3) by applying a control voltage to said at least one electrode (3) to collect at least part of electric charges generated in said photoelectric converters (3), a controller (8) configured to control the control voltage applied to said at least one electrode (6a) such that an area of said charge storage portion (7a) in one of two different phase periods of said modulation signal is different from the area of said charge storage portion (7a) in the other phase period of said modulation signal, a

Art Unit: 2878

charge ejecting portion (10) configured to output the electric charges collected in said charge storage portion (7a), and the electric charges collected in the other phase period by said charge storage portion (7a) formed in the other one of said at least two photoelectric converters (3), (column 9, lines 29-41, column 17, lines 44-67). Hashimoto et al is silent of explicitly disclosing an evaluation unit. Spirig et al disclose an evaluation unit (15) used to calculate the parameters of the detected radiation signals corresponding to the photodiodes (16), (column 3, lines 9-20). It would have been obvious to one of ordinary skill in the art to modify Hashimoto et al in view of Spirig et al to configure the evaluation unit in order to calculate the phase difference between the electric charges relative to the photoelectric converters resulting in accurately detecting reflecting light which is a function of information corresponding to the target space.

As to claim 2, Hashimoto et al disclose (fig. 1) at least two photoelectric converters (3) receive light from the target space (Ob), into which a flashing light is being irradiated, said controller (8) controls the control voltage applied to said at least one electrode (6a) such that the area of said charge storage portion (7a) in a lighting period of said flashing light is different from the area of said charge storage portion (7a) in a non-lighting period of said flashing light, and the electric charges collected in the non-lighting period of said flashing light by said charge stored portion (7a) formed in the other one of said photoelectric converters (3), (column 6, lines 65-column 7, lines 1-25). Hashimoto is silent of disclosing an evaluation unit by use of a difference between the electric charges. Spirig et al disclose an evaluation unit (15) used to calculate the parameters of the detected radiation signals corresponding to the photodiodes (16),

Art Unit: 2878

(column 3, lines 9-20). It would have been obvious to one of ordinary skill in the art to modify Hashimoto et al in view of Spirig et al to configure the evaluation unit in order to calculate the phase difference between the electric charges relative to the photoelectric converters resulting in accurately detecting reflecting light which is a function of information corresponding to the target space.

As to claim 3 Hashimoto et al disclose (fig. 3, 15) at least one electrode (6a) is a plurality of electrodes (6a), and said controller (8) controls the number of said electrodes (6a) to which the control voltage is applied, thereby changing the area of said charge storage portion (7a), (column 9, lines 29-40, column 17, lines 44-67).

As to claim 4 Hashimoto et al as modified by Spirig et al further disclose (fig. 1, fig. 2) that the evaluation unit (15) comprises an amplitude-image generator (14) configured to generate an amplitude image having pixel values (16), each of which is provided by said difference, (abstract, column 3, lines 4-20).

As to claim 5, Hashimoto et al as modified by Spirig et al disclose (fig. 1, fig. 2) that the amplitude-image generator (14) configured to generate an amplitude image having pixel values (16) each of which is provided by said difference, and a gray-image generator (10) configured to generate a gray image having pixel values (16), each of which is provided by one of amounts of electric charges collected in one of a lighting period and a non-lighting period of a flashing light by said charge storage portion (21) and an average of the amounts of electric charges collected in both of the lighting period and the non-lighting period by said charge storage portion (21), (Abstract, column 3, lines 1-20).

As to claim 6, Hashimoto et al disclose (fig. 3, fig. 15) that the controller (8) controls the control voltage applied to the at least one electrode (6a) such that the area of said charge storage portion (7a) formed in each of said photoelectric converters (3) changes in synchronization with a flash timing of said flashing light, (column 9, lines 29-42, column 17, lines 44-67).

As to claim 7, Hashimoto et al disclose (fig. 3, fig. 15) that the controller (8) controls the control voltage applied to said at least one electrode (6a) of each of said photoelectric converters (3) such that the area of said charge storage portion (6a) formed in one of said photoelectric converters (3) is larger in the lighting period than the non-lighting period, and the area of said charge storage portion (6a) formed in the other one of said photoelectric converters (3) is larger in the non-lighting period than the lighting period, (column 9, lines 29-42, column 17, lies 44-67).

As to claim 8, Hashimoto et al disclose (fig. 1, fig. 3, fig. 15) that the controller (8) controls the control voltage applied to said at least one electrode (6a) of each of said photoelectric converters (3) such that the area of said charge storage portion (7a) formed in one of said photoelectric converters (3) in the lighting period is equal to the area of said charge storage portion (7a) formed in the other one of said photoelectric converters (3) in the non-lighting period, (Abstract, column 9, lines 28-41, column 17, lines 44-67).

As to claim 9, Hashimoto et al as modified by Spirig et al disclose (fig. 1) a characteristic-amount extracting portion (17) configured to extract a characteristic amount of an object (11) in said target space according to said amplitude image(13)

Art Unit: 2878

generated by said amplitude-image generator (14), a similarity calculating portion (15) configured to calculate a degree of similarity between by comparing said characteristic amount (17) with a previously prepared template, and a target recognizing portion (16) configured to recognize said object (11) as a target object (11) corresponding to said template when the degree of similarity is not smaller than a predetermined value, (Abstract, column 3, lines 1-20).

As to claim 10, Hashimoto et al as modified by Spirig et al disclose that the object (11) to be detected is a face (11) and the spatial information detecting device (13) further comprises a template storing portion (21) configured to store a face template previously prepared according to characteristic amounts of said face, and said object recognizing portion (13) recognizes said face as a person (11) corresponding to said face template when the degree of similarity between said characteristic amount (17) extracted by said characteristic-amount extracting portion (17) and said face template stored in said template storing portion (21) is not smaller than the predetermined value, (Abstract, column 3, lines 4-20).

As to claim 11, Hashimoto et al disclose (fig. 1, fig. 3, fig. 15) a saturation determining portion (9) configured to compare (fig. 24a-24B) a predetermined threshold value (Th1, Th2) with amounts of electric charges (e) collected in at least one of said two different phase periods of said modulation signal by said charge storage portion (7a) and an output regulating portion (3, 6) configured to regulate an electric output corresponding to the intensity of received light according to the comparison result, (Abstract, column 7, lines 27-45, column 8, lines 58-62, column 21, lines 12-27).

As to claim 12, Hashimoto et al disclose (fig. 1, fig. 3, fig. 15) that output regulating portion (9) reduces the electric output of said photoelectric converter (3) when the amounts of electric charges are greater than the threshold value (Th1, Th2), (Abstract, column 8, lines 58-62, column 9, lines 28-40, column 17, lines 44-67, column 21, lines 12-27).

As to claim 13, Hashimoto et al disclose (fig. 1, fig. 3, fig. 15) a saturation determining portion (9) configured to compare (fig. 24a-24B) a predetermined threshold value (Th1, Th2) with amounts of electric charges (e) collected in at least one of said two different phase periods of said modulation signal by said charge storage portion (7a), (Abstract, column 8, lines 58-62, column 9, lines 25-40, column 21, lines 12-27). Hashimoto et al is silent of explicitly disclosing an evaluation unit that evaluates the target space by use of a preset difference value. Spirig et al disclose an evaluation unit (15) used to calculate the parameters of the detected radiation signals corresponding to the photodiodes (16), (column 3, lines 9-20). It would have been obvious to one of ordinary skill in the art to modify Hashimoto et al in view of Spirig et al to configure the evaluation unit in order to calculate the preset phase difference between the electric charges relative to the photoelectric converters resulting in accurately detecting reflected light which is a function of information corresponding to the target space.

As to claims 14, 15, Hashimoto et al disclose (fig. 1, fig. 3, fig. 15) a saturation determining portion (9) configured to compare (fig. 24a-fig. 24B) a predetermined threshold value (Th1, Th2) with amounts of electric charges (e) collected in each of said two different phase periods of said modulation signal over a storing time period

corresponding to a plurality of cycles of said modulation signal, and an output regulating portion (9) configured to regulate an electric output corresponding to the intensity of received light by changing the storing time period according to the comparison result, (column 8, lines 1-11, lines 58-62, column 21, lines 12-26).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DON WILLIAMS whose telephone number is (571)272-8538. The examiner can normally be reached on 8:30a.m. to 5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/598,274
Art Unit: 2878

Page 9

/Don Williams/
Examiner, Art Unit 2878

/Georgia Y Epps/
Supervisory Patent Examiner, Art
Unit 2878